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Water-courses in their Relation to the Public.

IN discussing proposed improvements to the Charles River at Boston, in our issue of May 16th, we spoke of the antagonism of the residents on the water-side of Beacon Street, because of the recommendation by the Park Department that a strip of new land should be created on the Boston side to be occupied by an additional row of buildings, which, of course, would cut off their view of the river. We remarked that, "if the new frontage cannot be secured, then, if possible, in compensation for retaining their privilege, the Beacon Street residents should be required to give their houses an aspect on their water-side worthy of the prospect which they so highly esteem." A correspondent now asks us to give a few suggestions as to how such an aspect could be procured by the owners of these houses and stables which are already along the river-bank.

The problem involved is a very important one, not only specifically in relation to this particular instance, but as a matter of general application, where the interests of a community are antagonized by undesirable forms of private occupancy of sites that especially concern the public welfare. When the important bearing which a body of water has upon the recreation and the health of a community is considered, it is remarkable that almost universally in this country, the opportunities offered by water fronts have not only been thoroughly neglected, but, in most instances, nuisances or structures of a specially ugly character have been permitted. These abuses exist notwithstanding the fact that desirable improvements might be made with ease and economy, owing to the naturally pleasing character of the surroundings. When park-like improvements are planned for an American municipality it usually happens that instead of making the most of distinctively characteristic natural features, such as a river-bank, a lake-front or a seashore, ground is chosen for the purpose that is not at all characteristic, and which must be adapted for the desired uses at the expense of much trouble and money; whereas, had a natural site been selected, little adaptation would have been necessary. In planning for the future occupancy of a region by a large population, particular attention should be given to the water-courses, with reference to utility as well as to beauty. It sometimes happens nowadays that plans are made with special reference to the growth of a large city. This should be one of the first matters to be attended to, but, as a matter of fact, it is frequently not thought of at all. Wise planning would secure uninterrupted surface-drainage by making the lines of the water-course the bases for roads and drives of a park-way character. The best grades and a pleasant diversity of scenery are thus secured, and forms of occupancy are prevented that, by the creation of nuisances and the pollution of running water, seriously endanger the health of an entire community.

In the projects for the improvement of the metropolitan region about Boston now under consideration due regard is had to this important element, and, so far as it can be done in a general way by the laying out of proposed park-ways and boulevards under the authority of the Metropolitan Park Commission, it is desired to take advantages of the banks of the rivers and streams. In one of the municipalities of the metropolitan district, the city of Newton, a system of thus utilizing all the water-courses in the place has been favorably considered, and certain important details of the plan are already realized. The same course should be taken throughout the entire territory of "Greater Boston." It has been made impossible, however, by the building up of many localities, and enormous future expenses for costly culvert construction, overflows and bad sanitation are thus entailed. The proposed improvement of the Charles River is one of the most important features of this character, and the health and prosperity of the community will be immensely promoted if it is carried out upon the lines proposed. It seems strange that the desirability of a beautiful water-front for this basin was not regarded in the planning of the great Back Bay improvement. The eminent architect, the late Arthur Gilman, was the author of this plan, which, in most respects, was a capital one, and characterized by liberal foresight. It was a singular oversight that permitted the back premises of Beacon Street to occupy the water-front.

Now, that occasion to remedy the mistake arises, the best way to meet the large expense required appears to be in the creation of new land, the profits on its sale providing for the cost of the improvement. The commonwealth would make a very considerable sacrifice in foregoing this great source of income in order to preserve to the present water-side residents their charming view. It has therefore been suggested that, if these residents are to secure a continued enjoyment of their present privilege by a limitation of the proposed filling to a width only sufficient for a drive and esplanade along the bank, they should, in return, contribute very liberally toward the expense of the great improvement, and also agree to substitute an agreeable architectural appearance of their premises for the present unsightly rear walls and rows of stables, back sheds and other offensive features for which they are responsible. Considered from the point of view of the public welfare, the plan of the joint board, which has been most thoughtfully considered by the most competent expert authority, appears thoroughly commendable. But should, for any reason, a modification be found necessary in the direction indicated, it is probable that the Beacon Street residents will be called upon to make liberal concessions in return. They cannot expect and probably do not desire to have a great public improvement blocked or marred solely for their private benefit.

The problem is, of course, a difficult one, but if the individual householders would divide the expense, the cost of the change need not be an excessive burden to any one. The easiest solution at first thought seems to be the erection of extensions so as to give new façades upon the river. Probably a serious objection to this, however, lies in the fact that the houses are generally planned with reference to the river from certain rooms, as libraries,

dining-rooms and music-rooms. The present arrangements would thus be interfered with, while it would probably be difficult to reconcile the extensions with the original plan.

A similar expedient would be to modify or reconstruct the present rear elevations, back yards, etc., in a way to give them an agreeable appearance. This might be achieved, perhaps, by the addition of balconies, loggias and bay-windows; by painting existing walls of rough brick; by equalizing sky-lines with the help of balustrades and parapets; by making the line of stables and back sheds the basis for a terrace-like effect, and by similar expedients. It is essential, of course, that these changes should be made upon some basis of common agreement, and not left to individual caprice in any respect, and that there should be a carefully studied harmony of effect in color, design, etc. Unity of action would be absolutely essential. To this end we recommend that the householders join in commissioning the most competent architectural and landscape authorities to devise the best possible scheme for dealing with the question. The most difficult element in this proposition is the fact that a few refractory individuals would, by their refusal, have the power to thwart the entire project.

Flower Days of the Midwinter Fair.

LIBERAL use has been made of both wild and garden flowers in decorations and otherwise at the California Midwinter Fair. The public has responded quickly to every effort made in this direction, and it is easy to see that any future fair in California will have still greater flower festivals and exhibitions. The material is here, if properly organized, to make the season of annual flower events highly attractive to the rest of the world, and full of educational value to the people of California, more especially to the children. Santa Barbara, the charming seaside city, has already a national reputation for its flower day, and other towns and colonies are instituting annual festivals. French, Spanish, Portuguese, Italian and oriental influences are all seen in the creations of the California flower festivals, while the guiding spirit of the whole is clearly American.

The notable flower event of the Fair was the floral festival of Saturday, May 19th. Four great arches of flowers, bunting and Pampas plumes were built at the corners of the Grand Court, and festoons of wild flowers stretched over the 500 feet of space from the flag-poles at the side to the tall tower in the centre of the court. White, green and gold were the prevailing colors here. In front of the Administration Building, a net containing 40,000 roses stretched between the flag-poles. Many buildings were beautifully decorated with evergreens, festoons and flowers. An estimate was made that the floats, arches and carriages in the procession, the main effects on the buildings and the battle royal in the afternoon used not less than four million flowers, a majority of which were roses. Such estimates are necessarily inexact, for no one could keep tally of the incoming boxes and wagon-loads of bloom, but collections of five or ten thousand roses made so little impression in the large spaces of the Fair, that one could measure in some degree the quantities required to cover the huge floats and triumphal arches.

The conventional elements of a flower procession, as of any May-time masque or other outdoor celebration, are seldom as attractive or artistic as the more free and original displays of individual talent. Great floats representing battle-ships and municipalities seem too often as formal and unimaginative as the grotesque allegorical pieces so popular in mediæval Europe. They are often the merest survivals of a splendid past, impossible of artistic revival. What seems to better suit the modern flower festival is the spontaneous and universal spirit of gayety expressed in a thousand simple forms. Flower-covered bicycles, carriages, carts, jinrikishas and other vehicles; flower-laden children, and crowds as full of sunshine as an Italian summer afternoon—these were the elements that really gave life to this California carnival, through which the huge floats lumbered like unwieldy galleons.

Nothing in the whole procession was more charming than a Japanese jinrikisha covered with the rich golden flowers of the beach lupin. A Japanese girl sat within and carried golden lupins. In all details, the harmony of color was perfect. Marguerites, white and yellow, were used in another jinrikisha, and a third was many-colored. The Chinese vehicles were probably the richest in color-scheme of anything on the grounds. Oriental flower-girls, blossom-wreathed equestrians, a garlanded bull and its rider from the Hawaiian village, and similar features passed in procession or wandered through the crowd, which, in the evening, numbered about 150,000. As I stood in the great court, watching the lighting up of building after building with electric flashes, the sweet breath of acres of blossoming Eucalypts, Acacias and white and golden Genistas came from many slopes of the wide park in which the Sunset City lies. Other acres of smaller blossoming plants lay about me, in and around the Grand Court. The flower carnival was merely a passing incident in the story of spring-time, and the hundreds of laughing children, who carried flowers home, were only one company out of the tens of thousands who take pleasure every day in the innumerable gardens of California.

Berkeley, California. *Charles Howard Shinn.*

The Road to the Pyramids of Gizeh.

THE avenue which is here most imperfectly depicted (see p. 235) is, I believe, in reality the noblest and most beautiful shaded avenue in the world. There are other fine avenues in Cairo, and that which connects the city with the village of Shubra on the north is justly very much admired; but it is composed of two sorts of trees, while the one above represented has only one sort. It is in Bulak, an island in the Nile west of Cairo, and four or five miles long. The avenue itself is on the western side of the island, and is, perhaps, two miles or two miles and a half long. The trees I have not measured, but I should say they are from seventy to eighty feet high, and the finest of them must be about one hundred feet in diameter through the top. They are all of them of the species to which Bentham gave the name of Albizzia Lebbeck (Arabic, *Lu'bach*, according to Speke), and such superb plants I have not beheld anywhere else. It is, of course, a tropical tree, related to the Acacia family, and originating, as some writers say, in southern India. It is common enough in the Orient, and I have seen several very poor specimens on the hills around Jerusalem, and much better ones on the slopes of Vesuvius; but nowhere does it attain the magnificent proportions or the extraordinary beauty of foliage which are displayed in this avenue. The richness of its dark color and the substance and lustre of its leaves give it a peculiar charm.

The best account of the Albizzia group that I have been able to find is that in Eugène Fournier's *Notes sur le genre Albizzia* in the *Annales des Sciences Naturelles* for 1860, where he specifies eighteen varieties. Bentham's special work on the Leguminosæ I have not at hand, but in his *Flora Australiensis* he describes five species, including the Lebbeck; Baron von Müller, in his valuable work on tropical plants available in Australia, describes eight varieties. Schweinfurth also speaks of finding the Lebbeck in the equatorial regions of Africa; and Captain Speke found it planted before the government house in Khartoom.

The variety of Albizzia with which we are most familiar in the United States, the Julibrissin, of which an admirable description appeared in Garden and Forest (vol. ii., p. 532), is said by Monsieur Fournier to have originated in the forests on the shores of the Caspian Sea.

New York. *C. A. Dana.*

American Parks.

DRUID HILL PARK, BALTIMORE.

THE beautiful city of Baltimore, in addition to its admirable situation at the head-waters of Chesapeake Bay, has agreeable undulations of surface, which give variety to its streets and importance to its monuments. With wise forethought, more than thirty years ago, one of the finest pleasure-grounds in the United States was acquired by the city in a forest of noble trees that have been growing from time immemorial, with the right conditions to attain perfection.

This forest has since been maintained as a place of recreation for its inhabitants to the lasting honor of the city which it adorns. The seven hundred acres of timber-land which constitute the present park, before their purchase by the city, had been for more than a hundred years in possession of the Rogers family, and the trees received the care bestowed on a valued private estate and grew to their present great size and beauty under the careful protection of their owners.

In 1689 Lord Baltimore deeded to Thomas Durbin a tract of 350 acres, called Hab-nab-alt-a-Venture. Of this, 150 acres, after passing through several hands, were deeded to Dr. George Buchanan in 1741, and two hundred acres had come in another line to Nicholas Rogers in 1716, which portion was willed to his daughter Eleanor, who married Dr. George Buchanan. Another tract, called The Level, of two hundred acres, was also inherited by Dr. George Buchanan, so that in his and his wife's estate there were 750 acres of valuable land on which he made his home, and to which, out of respect for its mighty Oaks, he gave the appropriate name of Druid Hill, which it still bears. In 1750 Dr. Buchanan died and was interred in the little cemetery, which, by the conditions of the purchase, still remains undisturbed within the park-enclosure. Under the English custom of primogeniture, his eldest son Lloyd inherited Druid Hill and left it to his only child, a daughter, who married her cousin Nicholas Rogers, and thus the property went into the Rogers family. It was from Lloyd N. Rogers, son of this marriage, that the park was purchased by the city of Baltimore in 1860. The last proprietor was an eccentric person, who was morbidly anxious to preserve the trees about him, and who carefully guarded them and jealously excluded all intruders who might do harm. The property was thus in admirable condition when acquired by the city, and almost the only work necessary was to open roads through it, so as to make its beauties accessible to the public.

The history of the purchase of the park is of practical interest to other towns desirous of obtaining parks at small cost to the municipality. At the time of its acquisition, in 1860, Baltimore was half-developed, and was in no condition to impose added taxes upon its people, and the system of street-railways was about to be introduced, under the difficulty of a wide diversity of opinion as to the profit of this enterprise. The fare on these railroads was established at an average of five cents per capita, but no bonus was exacted from the company for the use of the city streets. Therefore, when the ordinance creating the passenger-railways was presented for the approval of the Hon. Thomas Swann, then Mayor, he wisely insisted, as a condition of the franchise, that one-fifth of the gross receipts should go into the treasury as a fund for the park-purchase. To illustrate the practical working of this plan, it may be sufficient to say that for the first year the bonus paid into the city treasury amounted to $33,000, and that the increase soon showed promise of a revenue from $50,000 to $75,000 yearly from this source. Since the introduction of the electric cars, the revenue, which in 1868 was about $84,000, has become much greater, as travel has greatly increased, and nine per cent. is the park tax now exacted from the road. Thus, on delivering into the hands of the people this princely acquisition, not only was no bill of cost presented, but the property was provided with an income for its future maintenance. Exclusive of improvements, the cost in 1868 had been about $511,000.

On October 19th, 1860, Druid Hill Park was opened to the public with appropriate ceremonies, the Street Railway Company making a voluntary contribution of a suitable structure for the ceremonies of the occasion. So well laid out were the grounds, that even then the park could be penetrated in all directions by roads several miles in extent. Immediately after this inauguration the commissioners began a systematic course of operations, laying out the main avenue, the width of which is thirty-two feet, permitting four carriages to drive abreast; widening the farm-roads to make them convenient for carriages, bridging streams, cleansing the numerous springs and making accessible the remote parts of the grounds. Mr. Havard Daniels, who had made the parks of Europe a special study, was appointed landscape-gardener, and even before the inauguration he had accomplished much to throw the park completely open to the public. Since then many improvements have been made, and the park is the pride and delight of the cheerful inhabitants of the gay Maryland city.

The surface of the park is delightfully diversified. There are shady ravines and smooth hill-slopes, from the summit of which one has a broad outlook upon the picturesque groups of trees, and the shadow-flecked grass between, where flocks of Southdown sheep graze, guarded by collie and shepherd. One charming feature of the wood is the free herd of deer, of which two hundred are permitted to roam at large through its precincts. More than sixteen miles of drives wind among the fine old Oaks, and there are numerous bridle-paths and footways under their interlacing branches. Directly through the park runs a flag-stone walk for the convenience of the residents of Woodbury, a manufacturing town beyond its gates. There are sixteen lakes in the park. Druid Lake is the largest, and is a fine sheet of water, from which a tall fountain throws a lofty jet. This lake is artificial, and is practically a reservoir, part of the Baltimore system of water-works. A smaller lake is fed by a spring and is thronged with wild fowl. Another pond is used for boating in summer and skating in winter, and has, on an island in the centre, a picturesque little lodge. A chain of four ponds makes an attractive feature in another part of the park.

Rustic shelters and summer-houses are scattered here and there, and the old Maryland mansion-house of the Rogers family still remains within the confines of the park, nobly situated upon a rising ground commanding an extended view, with its verandas amplified to accommodate the public. There are large conservatories and a Palm-house, and the Maryland Building, erected by the state at the Centennial Exhibition in Philadelphia, has been set up here, and serves as a museum for relics having historic interest.

The lakes and rushing streams of the park, and its hills and pleasant meadows are of extraordinary beauty. Among the forest-trees are many of Oaks, Sycamores, Tulips, Hickories and other deciduous trees, which fully equal any to be found in the best public parks in the world. Even in winter the spectacle of the huge trunks and great interlaced branches is imposing, and the natural groupings on the broad lawns are of infinite variety. Vistas cut through the woods disclose views of the lake and the city, and from an elevated part of the grounds called Prospect Hill there is an extended prospect over the surrounding country.

No park in this country rivals Druid Hill in natural advantages, and it is to be hoped that future planting will not destroy its present noble and dignified aspect. A disposition to spot evergreens about under the old trees is unfortunate, since it tends to destroy the natural repose and park-like beauty of the scene, but this seems to be a universal failing among the planters of parks, who, not satisfied with a natural arrangement, seek to introduce something that is itself rare and beautiful, but which lacks appropriateness in such a situation. The setting of young evergreens among ancient Oaks and Hickories is a mistake, from a picturesque point of view, and can, I fear, hardly be considered good forestry. An advance in public taste has been shown, however, by a merciful removal of a row of urns for flowers which once lined the main avenue, so that wise ideas will probably in time prevail, and nothing be allowed to mar the stately old-time dignity of these remarkable trees and the perfect beauty of ancient Druid Hill.

Hingham, Mass. *M. C. Robbins.*

Foreign Correspondence.

The Temple Flower Show.

THE seventh great annual exhibition of the Royal Horticultural Society was held in the gardens of the Inner Temple, May 23d, 24th and 25th, and was a great success, notwithstanding the exceptionally unfavorable weather experienced in England for the week or so preceding the show and the cold wet weather of the opening day. The exhibits generally exceeded both in number and quality those of previous years, and had the management conceded all the space asked for by exhibitors the show would probably have been as large again.

It speaks well for the healthiness of horticulture in England when an exhibition of such magnitude can be got

together without the stimulus of prizes other than the medals, which are given more as a stamp of recognition than for any value they possess. Not only do professionals and amateurs who practice horticulture in this country readily take the trouble and go to the expense necessary to exhibit their best products, but, fortunately, the public show an interest in inspecting them, the exhibition grounds being crowded to excess all day, while a broad and continuous stream of people were to be seen going to or from the show by way of the beautiful road which skirts the Thames from Blackfriars Bridge to Westminster. It was an exhibition to be proud of, and the Royal Horticultural Society never did a better stroke of business than when they got permission from the law professors who guard the sacred belongings of the Inner Temple to hold annually an exhibition in its grounds.

Orchids were far ahead of all other exhibits as regards the number shown, their beauty and interest and their attractions for visitors. Sir Trevor Lawrence and Baron Shrœder among the amateurs, and Messrs. F. Sander & Co., James Cypher, B. S. Williams & Son and Low & Co. among nurserymen, were the principal exhibitors. There were few new Orchids, but a great many of those rare and valuable varieties which are only to be seen in first-rate collections. Baron Schrœder's magnificent display of Odontoglossum crispum, comprising nearly all the choicest forms of this species, was one of the richest features of the exhibition. Second only to this was Messrs. F. Sander & Co.'s group of white varieties of Cattleya Mossiæ, comprising twelve distinct forms, and including the plant of C. Reineckiana, for which they paid one hundred and sixty guineas at the Hardy sale of Orchids last week. This fine specimen of a very fine variety bore about fifty flowers, from some twenty or more healthy growths. A group of Odontoglossum crispum, from G. Vincke, of Bruges, was rich in good varieties, the plants showing extraordinary vigor of growth and spike. Lælia purpurata is always well represented at this exhibition, and the group of it shown by Mr. James Cypher, the Cheltenham nurseryman, was a marvel of cultural skill and beauty of flower. Baron Schrœder's magnificent specimen of Cœlogyne Dayana this year carried no less than twenty-four racemes, the total number of flowers being nine hundred and thirty. Messrs. F. Sander & Co. showed many fine examples of this Orchid, which is one of the most remarkable, if not one of the most beautiful, in the genus. The most exciting Orchid shown was a variety of Cypripedium callosum named Sanderæ, which repeats in this species the freak of C. Hyeanum among the sports of C. Lawrencianum. To my taste it is not a pleasing Orchid, its colors, pale green and white, being more remarkable than beautiful. However, its fortunate owner, Mr. F. Sander, assured me that he would not take a thousand guineas for it, as it will have immense value for breeding purposes. A hybrid Phajus named Owenianus, the result of crossing P. Oweniæ, a variety of the Cingalese P. bicolor, with P. Humblotii, was another of Messrs. F. Sander & Co.'s exhibits, and a most lovely plant it is, its elegant flowers of a rich plum color. If its constitution is as good as that of P. Cooksoni it will deserve to rank with it as a hybrid of first-rate excellence. Another Sanderian hybrid, this time a Lælio-Cattleya named Frederic Boyle, is a cross between L. anceps and C. Trianæ. It is more interesting from its origin than on account of any peculiar beauty it possesses. The parents are both to be seen in the hybrid, but the blend is not what I should call a happy one. Its flowers are whitish and rose-purple. A trophy-like specimen of Oncidium ampliatum was a prominent feature in the St. Albans group; it was a mass of arching spikes; it is said there were altogether about 5,000 open yellow flowers upon it. I also noted Thunia Brymeriana, Sobralia Keinastiana, Phalænopsis Youngiana, the beautiful hybrid Lælio-Cattleya Phœbe, recently noted in Garden and Forest, besides many other grand Orchids in the group sent by Messrs. F. Sander & Co. Sir Trevor Lawrence showed a very fine collection, worthy of his name and garden, and no plant attracted more attention than the little hairy-flowered Bulbophyllum barbigerum, which moved up and down as if alive. I also noted in his group a plant of the new Stauropsis Massaiana, recently introduced by Messrs. Linden. It is only a small-flowered form of S. lissochiloides, of which Stauropsis or Vanda Batemannii is a synonym. Cypripedium Sanderianum, Vanda teres and some grand varieties of Cattleya Mossiæ were other noteworthy plants among the Orchids.

Next in interest to these came the hardy plants, of which there were numerous large collections from all the leading nurserymen who pay exclusive attention to this class of plants. Clematis were represented by a group of magnificent specimens from Messrs. R. Smith & Co., of Worcester, for many years the principal growers of Clematis. This exhibit represented probably the finest piece of horticulture in the show. All the plants, to the number of about thirty, were in the form of globes, three or four feet through, and from the groundwork of healthy foliage sprung the large, well-formed, handsome flowers, arranged somewhat formally, but not out of keeping with the character of the plants. Messrs. Lane, of Berkhampstead, sent a fine group of yellow and orange-colored varieties of Azalea mollis, the value of which, as a hardy shrub, has not yet come to be properly appreciated.

A group of hardy flowering trees, shrubs and Lilies from Messrs. J. Veitch & Sons was a beautiful picture full of interest. Magnolias, Cytisus, Tabiana imbricata, Styrax Obassia, Azalea rosæflora—quite hardy at Kew—Philadelphus microphyllus, Indigofera Gerrardiana, Andromeda speciosa, all represented by fine, well-flowered specimens, were mixed with Lilium giganteum, L. longiflorum and the new L. Alexandræ. The latter promises to be a good garden Lily. I believe it is a hybrid of Japanese origin between L. auratum and L. longiflorum, the flowers being large and pure white.

Richardia Elliottiana was shown in fine condition by Baron Schrœder. It differs from R. Pentlandi in having gray spotted leaves and no blotch of crimson at the base of the spathe. Datura chlorantha, a yellow-flowered variety of D. arborea, was shown by Mr. Bennett-Poë and obtained a first-class certificate. The same exhibitors sent a batch of well-grown specimens in pots of Alströmeria pelegrina alba, each plant two feet high and through, and covered with clusters of white flowers flushed with green. It also obtained the premier award. Rhododendrons were well shown by Messrs. G. Paul & Son, Cheshunt. Two hybrids, named the Duke and Duchess of York, raised at Cheshunt, from R. Fortunei and a seedling named Scipio, were awarded first-class certificates; they have the foliage and habit of R. Fortunei and large, loose trusses of large, rose-pink flowers. Begonias, Pelargoniums, Gloxinias, Streptocarpuses, Calceolarias, Leschenaultias Boronias, Caladiums, Ferns and Roses were shown in large quantities and teemed with interest for the specialist as well as with delight to the eye of the ordinary visitor.

The International Horticultural Company, Brussels (Messrs. Linden), sent a collection of miniature Tree-ferns from Brazil. They are remarkable for the thinness and elegance of their stems, and if they retain their character under cultivation they will be useful. They were named Hemitelia Lindeni, Cyathea Mastersiana, C. pygmæa and Alsophila Marshalliana, and they were all awarded first-class certificates. A variegated Adiantum, named Claesianum, in the way of A. Peruvianum, and some ornamental-leaved Begonias were other exhibits from the Brussels nursery. Forms of Maranta Massangeana, shown by Messrs. Linden, are really only varieties of the variable M. bicolor, which includes various other so-called species of Maranta and Calathea.

Two plants which won general admiration were Rose Crimson Rambler and Carnation Uriah Pike; these are of that character that is certain to make them in large demand for some time to come. Messrs. F. Sander & Co. sent a group of their new plants of last year, and

Fig. 40.—An Avenue of Lebbeck Trees in Egypt.—See page 232.

also Bougainvillea glabra Sanderiana and Heliconia illustris. The last named is a stove-plant of brilliant color, probably not a Heliconia, although, perhaps, related to it; it has hastate leaves with sheathing bases, the color of which is bright rose-red.

As a whole the exhibition may be taken as fully representing the strength of horticulture in England, and the great variety and cultural excellence shown by the exhibits is probably equal to anything ever seen here. Fifty years ago Orchids and herbaceous plants counted for comparatively little in England; now they are pre-eminently first in the attention they receive.

London. *W. Watson.*

Cultural Department.

Notes on Trees and Shrubs.

AMONG the numerous species of wild Roses in the collection of the Arboretum the earliest to flower this season was Rosa acicularis, whose first buds were expanded on the 14th of May. Last season the same plant produced its first flowers on May 25th, in 1892 about the same date, in 1891 about May 21st, in 1890 on the 26th, and in 1889 on the 16th of May. These data show pretty fairly the relative advancement of the seasons in the different years at that particular time, although hot or cool weather before or after a special time may hasten or retard vegetable growth, so that earliness or lateness in flowering is not uniform throughout the spring and early summer when compared with other years and starting from a given date.

The Rosa acicularis in cultivation is a native of northern Europe, for although the same species is native in parts of our own country, the American form does not appear to have been brought into general cultivation from its native haunts. R. acicularis has all the qualities of fragrance, size and rosy color of blossom which we usually associate with wild Roses, our indigenous local species being just as beautiful and attractive and only lacking the one merit of extreme earliness. The stems are prickly and attain a height of five or six feet or more; they are likely to spread by underground suckers.

Rosa alpina, another European species, is but a day or two later in flowering than the earliest R. acicularis, and has the recommendation of being almost or quite without prickles or bristles. In other respects it is very much like R. acicularis, except that it does not grow quite so tall, and it might well be substituted for it. It is considered as one of the parents of the old-fashioned climbing Boursault Roses, and several other double or half-double forms have been produced from it.

After these two species of Roses it is not easy to say which Rose has precedence in the order of flowering. The first native New England species to produce blossoms is Rosa blanda, which here opens its first flowers ten or twelve days later than the earliest R. acicularis. In cultivation the plant will grow two or three feet high. It usually bears few, or sometimes no prickles, and the blossoms average a good deal larger than those of the first species mentioned; the rosy color of the petals is often marked by numerous narrow light-colored streaks or blotches. Before this species begins to flower, however, some of the little Scotch or Burnet Roses, varieties of R. spinosissima, have become quite conspicuous with bloom, the earliest being not many days behind R. acicularis. These, although single, can hardly be considered simply wild Roses, as they have generally been somewhat modified by cultivation. The usual color is white or pale yellowish white, and the size of the flower varies with different individual plants. A specimen received from Kew under the name of Rosa grandiflora has large pale yellow flowers which measure quite three inches across. The name grandiflora, however, does not properly belong to it, as it appears to be nothing more than a tall-growing, vigorous and large-flowering variety of the Scotch Rose known to some rosarians as R. spinosissima altaica. A very pretty and early variety received from Kew as R. spinosissima pusilla has large single pale rosy colored blossoms, and is one of the best of those in which red or rosy colors appear.

Lonicera Korolkowii, which was first described and figured in the current volume of Garden and Forest (page 34, fig. 4), is just now, in the first days of June, in its fullest and best bloom, and it is at once the most distinct and attractive of all the Bush Honeysuckles at this time, when most of the flowers of the common Tartarian Honeysuckles have faded. The flowers, though small, are produced in great profusion. They are not so strongly fragrant as those of the Tartarian Honeysuckles, the odor being rather faint and delicate. The little plant received in 1881 is now ten feet high, spreads widely, and is well covered with small grayish foliage, which gives the whole plant a glaucous or cinerous aspect. It is a shrub well worth a place in any collection. The fruit has not yet been produced in abundance. It is very small, bright red, and is greedily eaten by birds as soon as ripe. This species may be readily propagated by cuttings of the mature wood.

Arnold Arboretum. *J. G. Jack.*

The Rock-garden in June.

THE rock-garden is less bright now than during May, but is still full of color. The showy patches of Phlox subulata are nearly all out of bloom; only one remains in full beauty, and this is a chance seedling. It is a blue variety, somewhat resembling Sadie, but with more compact habit and full round flowers. Rocky Mountain Columbines, in blue and white, among yellow and orange Iceland Poppies, make a harmonious color-scheme, as do blue Globularias and crimson Fire Pinks in one place, and Fire Pinks and the blue Alpine Bugles, Ajuga Genevensis, in another. This Fire Pink (Silene Virginica) was sent here a few years ago from Virginia, and is well established. It is not obtrusive, and there can scarcely be too many of such strikingly beautiful plants.

Rock Roses (Helianthemum), in shades of orange, red and white, are interesting and beautiful when planted where they droop over a ledge. The imported plants do not do so well as acclimatized seedlings, several of which have settled themselves here. Phyteumas are pretty and distinct members of the Bellflower family; their flowers are arranged more or less in heads, sometimes oblong, sometimes round, nearly always blue, and seldom white. P. Charmellii and P. orbiculare are among the best varieties. Myosotis rupicola, a gem among alpine Forget-me-nots, is scarcely three inches high; Linaria alpina is another diminutive plant, a distinct and pretty member of the Toad Flax family, with glaucous foliage, and blue flowers with an orange throat. Soldanella alpina, a delicate but lovely little member of the Primula family, has struggled along for three or four years, and its location has been changed several times; it now seems to have found congenial quarters, and is giving us a few flowers this year for the first time. It is planted on the north side of a large stone, which shades it from the midday sun. Beside this is another gem of the season, the rare Ramondya Pyrenaica, also now in bloom. Though easily enough grown in pots, it is hard to establish when planted out. Plenty of moisture is required and good drainage is necessary. Potentilla tridentata is perfectly at home in a cleft of rocks, and its dark green, shining foliage and white star-like flowers are very effective. Alpine Poppies in red, white and yellow shades, though delicate, are becoming more hardy, but I strongly suspect, by the appearance of several seedlings, that there is an infusion of Papaver nudicaule, the yellow Iceland Poppy.

Phlox repens, dwarf, deep rose flowered, and P. divaricata, slightly taller, in shades of blue and white, are growing together and do well. These follow the Moss Pinks, and, though not so bright, are still a very effective species. Aster alpinus speciosus is by far the best of several varieties of the alpine Aster. The flowers are solitary, three inches across, on stems six inches high and bright rose color. Seeds of this fine new variety were sent to me by Mr. Robert Cameron, of Cambridge Botanic Garden, where they were received from St. Petersburg, having been collected in central Asia. I have raised several hundred of these plants from seeds collected last autumn. It is easy of cultivation, and should soon be abundant.

The yellow Globe-flowers (Trollius) have a stately beauty and effectiveness among lesser plants, and give variety to the garden. So, also, do Oriental Poppies, of which we have now several charming varieties, and the long leafless scapes of the American Cowslip, Dodecatheon medea, with large heads of pendulous lilac flowers, reflexed in the same way as the Cyclamen, these two genera belonging to the same natural order.

Other noteworthy plants in bloom are Saxifraga Wallacei, a fine tufted variety with white flowers; Gypsophila repens, in dense sheets of white; Heuchera sanguinea, with long, slender scapes of coral-red flowers; Armeria vulgaris, Laucheana, the best of all the Sea Pinks, and always a favorite; Geranium sanguineum, a perennial bloomer; Saponaria ocymoides, with beautiful flesh-colored flowers, but liable to be weedy; Astragalus Monspessulanus, a rose-flowered milk Vetch, always in bloom. Gentiana acaulis still gives us a few flowers, and will be succeeded soon by G. cruciata, less beautiful, but hardier. Viola cornuta, in blue, yellow and white varieties, will con-

tinue to give us flowers until autumn, and so will Campanula Carpathica in many forms and varieties of color.

Wellesley, Mass. *T. D. Hatfield.*

A Few Neglected Hardy Plants.

IRIS PSEUDACORUS is an Iris which I am most often asked to name. It always makes an impression, more especially when grown by the margins of water, where it is perfectly at home and in entire harmony with its surroundings. It, however, grows freely in drier situations, and is a good garden Iris. The leaves are dark green, sword-shaped, about two feet long, and the flowers are borne above these. The flowers are a rich, deep, but bright yellow, and the signal is a darker yellow, with brown linings. The falls are spoon-shaped and suddenly narrowed to the claw. The standards are small. The plant is free-flowering and very effective. The variety with variegated leaves, striped white, is also in flower. It is an ornamental plant, but I prefer the green-leaved form.

Iris Boissieri is a bulbous species found in Spain in the Gerez Mountains, and differs entirely from the so-called Spanish Irises of gardens. The leaves are linear, much channeled, and ribbed on the outside; they show above ground in the early year. I. Boissieri flowers at the height of twelve inches. The flower is very handsome, with reddish purple styles of a metallic shade and rich violet-purple rounded oval falls. The claw is marked with a brilliant yellow keel quite to the base, on which are many hairs, which, however, do not form a beard. I am in some doubt as to the reliability of this Iris, as my first stock disappeared after two years. The present plants seem sturdy enough, but are in a less exposed situation.

Garden notes would be much more effective if one were handy with the pencil and could sketch some of the charming plants to which neither the camera nor words can do justice. A photo-print is usually a mere parody to a plant fancier who has the feeling to discern the differing phases of beauty of each plant as it progresses in its life. Only a deft human hand could translate these phases for others in a picture. This is especially true of many dainty little plants which are often neglected for the more showy ones; for instance, the California Dog-tooth Violets. These Erythroniums are all most charming plants, most difficult to describe with less than a color-sketch. The half-dozen or more varieties are distinct with variations very marked to the eye, yet elusive to the pen. They have been noted often in GARDEN AND FOREST, and should be found in all gardens. The little Mouse Ear Cerastium Biebersteinii is now a dense mat of silvery foliage, above which are numerous little white bell-shaped flowers about half an inch wide on delicate stems.

Quite different in effect is another mat of dark green leaves close to the ground, and covered with dark blue minute flowers, Veronica cercæoides; this is earlier than V. rupestris, which has a similar habit, but is later in flowering. The Sandworts also make pretty mats, with narrow grass-like foliage and small white flowers. Arenaria aculeata and A. verna, var. cæspitosa, are good varieties of these. Thymus montanus, again, is different in effect, with grayish woolly leaves. The small Saxifrages are a host of which I have noted a few earlier in the season. The Sempervivums also make mats of rosettes of more or less beauty, but do not compare in effectiveness with the small Sedums, of which there are many that are effective in themselves and useful over some bulbs in hiding the bare earth. They do especially well in dry places. Some good species are S. dasyphyllum, with fine glaucous blue foliage; S. Meehani has fine dark green foliage, and is much superior to S. acre; S. Nevii has rosette-like leaves of a dull green. The southern S. ternatum is now covered with white flowers. S. Middendorffianum has narrow leaves, usually dark red. The more showy prostrate plants, as the hardy Candytufts, the Aubrietias, the hardy Alyssums, the Phloxes and the Thymes, are most interesting plants, useful in many places in the garden, and are very attractive.

Elizabeth, N. J. *J. N. Gerard.*

Carnation Notes.

CARNATION-PLANTS still flowering on the benches will be benefited by a mulching of fine well-decayed manure. Before putting it on, the surface-soil should be slightly loosened, and the plants which have fallen over tied up. A thorough soaking of water should be given after applying the top-dressing, and good effects will soon be observed. The plants need abundant watering from this time, and some stimulant may be given once a week. A sharp watch must be kept for red spider, which is the most destructive foe during the summer months, and the plants should be well syringed at least once on every bright day. Some Carnations, such as Grace Wilder, Daybreak and Edna Craig, are more susceptible to the attacks of spider than others, and if the pest once gets a good foot-hold the plants may as well be pulled out. Nearly all kinds of Carnations are now showing a heavy crop of bloom, and it will pay to give them careful treatment until the beginning of July, when early propagated plants will be flowering outdoors; if necessary, however, Carnations grown under glass can be carried along until the end of August.

Plants for summer blooming and for housing next winter should all be planted out by this time. Those intended for early flowers ought not to be stopped after the end of May. Some cultivators do not know how to stop the plants, and I have seen men who grow Carnations in large quantities go over the plants and snip the ends of the shoots with a pair of scissors. It is needless to say that this sort of stopping is worthless, as in nine cases out of ten the tops are not removed at all. The proper way is to hold the shoot which requires stopping with one hand, and draw out the top with the other. It is well to look over the plants once a week, as runaway shoots have a weakening effect on them. If any particular kind shows rust badly it should be pulled up and burned, for no remedy will cure the disease without killing the plants, and it is not wise to endanger the health of the whole stock for the sake of one kind, however good it may be.

The two new pink Carnations, Ada Byron and Nicholson, promise to be good summer bloomers here. I recently saw a magnificent lot of these two varieties at their home in Framingham. The plants were a perfect thicket of flower-spikes and the flowers of excellent quality. Mr. Nicholson informed me that he could not grow enough of the flowers to supply the demand. Ferdinand Mangold, in another house at Framingham, had stems two to three feet long. This is still the best crimson variety, although the new variety, Jacqueminot, sent out by Peter Fisher & Co., Ellis, Massachusetts, will, no doubt, win favor. A reliable white Carnation is still wanted. Mrs. Fisher is a fine summer bloomer, and an equally good one in winter in some places, but it has a weak stem, comes colored in winter, bursts the calyx and dies out badly. Silver Spray has a fine stiff stem, but is so badly diseased as to be worthless. Puritan does not bloom freely enough, and the flowers are not of sufficient size and texture. Lizzie McGowan is a very free bloomer, has a fairly good stem, and does not burst very much, but it is not by any means rust-proof, and the flowers, while pure white, reflex too much. Some of the newer introductions, such as Storm King, may have the necessary qualifications for an ideal white. At Framingham there was a batch of a promising white seedling of Mr. Nicholson's raising. The flowers were similar to those of Storm King, now being introduced by Mr. Ward, of East Moriches, New York; they were borne on stiff stems, did not burst the calyx and were of large size. Some of the last year's Carnation novelties have turned out utterly worthless, and such varieties as Edna Craig and Grace Battles are likely to be little heard of after the present season. William Scott proved the best novelty among pink colors.

It seems difficult to get any yellow Carnation to bloom profitably. Golden Triumph, when well grown, is splendid, but it rusts worse than any other kind I know of. Golden Gate is of poor color, rusts badly, and nearly every flower bursts. Buttercup does well only in the hands of a few. Bouton d'Or, sent out by Dailledouze Brothers, New York, and Goldfinch, one of Mr. F. Dorner's introductions from Lafayette, Indiana, are both promising novelties which were distributed this spring. Helen Keller, the new striped Carnation, which has commanded an extraordinary price in Philadelphia during the past winter, appears to have a good constitution, and is said to be free from disease so far. Striped Carnations are never so popular as self-colored ones, but in Helen Keller, at least a temporary success has been made.

Taunton, Mass. *W. N. Craig.*

Adiantum Farleyense.—This is one of the few varieties of Ferns that do not produce spores and have to be propagated by division of the old plants; early spring is, perhaps, the best time in which to propagate, before active growth has commenced. The fronds should be cut closely from the old plants and all soil shaken from the roots. These should then be divided into as many parts as there are single crowns, and the smallest crown will grow. They should be placed in a bed of cocoa-nut fibre refuse, the crowns being barely covered with the fibre. They require gentle bottom-heat in a stove temperature, and to be kept moist. The crowns will

soon begin to throw up fronds, and when they have grown sufficiently the new plants should be placed in small pots in a mixture of two parts loam, two of leaf-mold, one of well-broken peat and one of coarse sand. As they require shifting on, less leaf-mold should be given and a little bone-meal added, but the bone-meal must be used carefully. When fully grown, A. Farleyense is the most elegant of all the Adiantums, the fronds often measuring eighteen inches to two feet in length and ten inches in width. The divisions of the fronds are deeply fringed and crisped, and the young fronds beautifully tinged with pink. It requires a stove temperature continually and is very susceptible to overwatering, but should never be allowed to become dry.

New Dorp, N. Y. *William Scott.*

Correspondence.

The Flowering of Blood-root.

To the Editor of Garden and Forest:

Sir,—I have been much interested this spring in the development of some plants of the common Blood-root (Sanguinaria Canadensis) which have become established in my yard. Early spring was unusually capricious, so that these plants by turns developed rapidly and shivered in the wind, or were buried in full bloom under the snow.

The single, broad and deeply lobed Blood-root leaf, up to the time of flowering, is folded tightly around the flower-stalk and refuses to release it when the solitary white flower is ready to open, so that the prisoner has to force itself out. As the petals expand and their summit rises above the leaf-fold they are obliged to beat the leaf down to make room for themselves, which they do in the course of an hour or so. It is soon found that an elongation of the flower-stem is also taking place, and the flower is soon carried entirely above the leaf, the stem making a growth of nearly two inches in the two hours that attend the opening of the flower. On the second day the leaf relaxes and expands, soon to be followed by other leaves from the root. If there is lacking any evidence of design in plant-growth the mode of flowering of the Blood-root ought to furnish it.

There is another Blood-root from North Carolina, in occasional cultivation here, which differs considerably from our own, though scarcely distinguished from it by botanists. It has a leaf of similar shape, but of a steel-gray color when young; it flowers later and has a shorter flower-stem, which does not appear to possess this power of elongation on the day of flowering. Blood-root with pink flowers is occasionally found in this vicinity.

Buffalo, N. Y. *John Chamberlin.*

Orchids at Short Hills, New Jersey.

To the Editor of Garden and Forest:

Sir,—A visit to the Orchid-houses of the United States Nurseries, at Short Hills, New Jersey, is interesting at this time, when there are several thousand flowers expanded. Odontoglossum crispum is now at its best, and, considering how recently the plants were imported, the flowers are exceptionally good in size, form and color. It has often been argued that O. crispum cannot be grown as successfully here as in Europe, on account of the hot summers and dry atmosphere, but, in houses of good size and proper exposure, flowers equally good may be produced here. In the same house the brilliant colors of a fine batch of Masdevallias, including M. Harryana, M. Veitchii and M. ignea, make a pleasing contrast with the flowers of Odontoglossum crispum. Adjoining these a collection of choice Miltonia vexillaria is in flower, the exquisite colors of the flowers being suffused with a delicate silvery frost. Oncidium cucullatum is also well represented, and is remarkable for its many varieties, with scarcely two flowers alike.

In a house set apart for flowering Orchids hundreds of the showy and beautiful Cattleya Mossiæ and C. Mossiæ Hardyana make a wonderful display in many bright shades and colors. Scattered among the plants of C. Mossiæ are fine specimens of Lælia purpurata atrorubens, L. purpurata Russelliana and other varieties of L. purpurata ranging in color from white to violet-rose, rich purple and yellow. There are also specimens of Cattleya Mendelii with numerous flower-spikes and well-defined flowers, and the beautiful C. Schrœderæ, the quaint C. Schilleriana and the golden-yellow C. citrina. Other Orchids in flower now are the rare Zygopetalum gramineum, Lycaste tetragona, Aërides odoratum, Oncidium Marshallianum, Dendrobium Dalhousianum, Epidendrum rhizophorum and Chysis bractescens.

Of Cypripediums there are a large number and variety in flower, among others C. Lawrencianum and its albino form, the beautiful C. Greyanum, C. Leucorrhodum and C. Brownii, some fine plants of C. caudatum and the curious Uropedium Lindeni; also interesting forms of C. Almum and C. Lathamianum, besides many plants of C. superciliare, C. concolor, C. bellatulum, C. niveum and the beautiful C. tonso-villosum and other varieties of this class.

New York. *J. E. L.*

The Forest.

Mixed Oak and Beech Forests of the Spessart.—III.

Former Treatment of the Forests.

SMALLER areas of similar character are numerous, but the largest proportion of old Oak-trees are found scattered among the Beech-forest at the rate of less than, say, two trees per acre, and in these woods, as a rule, the Beech is younger than the Oak. This remarkable fact, that old Oak-trees are generally associated with Beech of younger age, is mainly due to the circumstance that the Oak has a longer life than the Beech. Besides this, however, it must be remembered that formerly more Beech was cut in certain portions of this forest than Oak. In those days, before the time of railways, when mineral coal had not yet been brought to every town and village, wood was the only fuel used, and on account of its great heating power the Beech was preferred to all other kinds. In those days roads did not exist in the Spessart, and heavy Oak-timber could only be brought away from the outskirts of the forest. In the higher and inner portions the old Oak-trees remained untouched, and their chief value was to shelter the summer grazing-grounds and to yield Oak-mast for the numerous herds of swine that were driven into them from the rich valleys around. In those days the Spessart was important, not merely on account of the Oak it contained, but to a much greater extent supplying fuel in the shape of Beech-wood. The treatment of these woods was by selection fellings, single trees being cut out here and there, as happened to be most convenient, without interrupting the canopy. Under such a system the Beech will reproduce itself readily, for Beech seedlings do not demand much light while young, but rather require shelter against sun and night frost. The Oak, on the other hand, demands much light while young; the necessary result, therefore, has been extensive thickets of Beech, without any young Oak in them. The relation between Oak and Beech is not anywhere the same. In other parts of Germany, where soil and climate are particularly favorable for the growth of the Oak, this tree holds its own in an even-aged mixture with the Beech. In the Spessart, on the other hand, the Oak is overtopped and finally killed by the Beech, wherever they grow together in thickets and have the same age.

At a later period glass factories were established in many places in the Spessart, which consumed fuel on a very large scale. Their demands could not be satisfied under the old system of selection-fellings; clear-cuttings, therefore, became the rule. From the old records it appears that in 1729 orders were issued to the effect that on all clearances a certain proportion of shelter-trees should be left to shed seed and to insure the regeneration of the fruit by self-sown seed. This was the first step toward a regular system of natural regeneration under shelter-woods, a method which, at a later period, has given excellent results. In these early days, however, it is probable that the seed-trees left standing were mostly old spreading trees, under whose shade the Beech came up well, while the Oak had no chance. As a matter of fact, there are hardly any Oak-woods in the Spessart dating from the eighteenth century. There is almost a complete break between the woods on the north-west face of the Geiersburg with Oaks dating from the middle of the seventeenth century, and a considerable area of Oak-woods in different portions of the range, now 90 to 100 years old, which date from the end of last and the commencement of the present century. Only very small plots are found here and there with Oak-trees from 100 to 150 years old. Single Oak-

trees of that age and younger are scattered in Beech-woods of the same age, but, with very rare exceptions, they have been overtopped by the Beech, the stems are lank and weak, the foliage is thin; in fact, they are living, but lingering, and, in many instances, dying proofs that the Oak has no chance against the Beech, if growing in an even-aged wood, unless the Beech in the vicinity of the Oak is cut back or lopped from the commencement. Attempts have been made of late years, in some places, to save such Oak-poles by girdling the Beeches in the vicinity. Girdled Beech-trees are weakened by the operation; their foliage gets thin, and ultimately, in four or five years' time, they die. This operation, however, has been futile; the remedy has come too late, and of the numerous Oak-poles and under-sized Oak-trees which are scattered among even-aged Beech woods, very few will attain a marketable size.

OAK-WOODS UNDERPLANTED WITH BEECH.

Of the younger Oak-woods, those in the vicinity of the "Weissenstein," in the Rothenbuch range, may be noted. Here are 690 acres in one block, completely stocked with Oak 50 to 100 years old, with a dense underwood of Beech. At an elevation of 1,500 feet, a wood in which the Oak in 1891 was ninety-eight years old, was found to contain 260 stems per acre, the mean height of the wood being seventy-five feet; trunk-diameters, breast-high, eight to ten inches, and the Beech underwood twelve to twenty feet high. In the Rhine valley, at a lower elevation (300 feet) and on richer soil, the Oak shows a more rapid growth, attaining at that age ninety feet, with a diameter of twelve to fifteen inches. The underwood of Beech in the woods last mentioned is not natural. Originally they were all nearly pure Oak-woods. When forty to fifty years old they were thinned heavily and underplanted with Beech, and in places Beech-nuts were sown to create an underwood of that tree. The object of this operation is to shelter the ground and to promote the development of the Oak. It has already been explained that thickets of pure Oak are dense enough, but at a later stage, when the trees have attained the condition of poles, the wood becomes thin and the leaf-canopy is not sufficiently dense to shade the ground. The result is that the soil dries up and the stems become branched and irregular. The foliage of the Oak not being very dense, the leaf-fall does not enrich the soil in the same way as is the case in Beech-forests. Hence the great advantage of an admixture of Beech with the Oak. By far the most favorable condition of affairs is found where Oak and Beech grow up together from the commencement, provided the Oak has a sufficient start, so as not to be overtipped by the Beech, or is protected against encroachment by lopping or cutting back the Beech. When this is the case, the soil improves steadily, the Oaks clear themselves at an early age of side-branches and form straight, tall, well-shaped stems. Where this has not been the case, in pure Oak-woods, it is necessary at a later age to introduce the Beech and to make heavy thinnings in order to enable it to grow.

SHADE-BEARING AND LIGHT-DEMANDING SPECIES.

Foresters make a distinction between trees which demand much light, such as the Oak, the Larch and the Scotch Pine, and trees which endure much shade, such as the Beech, the Hornbeam, the Silver Fir, and, to a less extent, the Spruce. The trees of the first-named class are called light-demanding, those of the second, shade-bearing. The difference between the two classes is very great and shows itself in a variety of ways. Light-demanding species are impatient of shelter while young, their foliage is light, and, as explained before, woods consisting of them get thin and open when old.

On the other hand, shade-bearing trees, such as the Beech and the Silver Fir, and to a less extent the Spruce, are tender while young, being readily killed by sun and frost. These species, however, have the great advantage that they will spring up under shade, and although with an insufficient supply of light, they will not make much progress; still, they will maintain themselves, ready to shoot up whenever light overhead is given by the removal of shelter-trees. It follows, that wood consisting of species which stand much shade can be regenerated much more easily by self-sown seed than forests composed of Oak, Scotch Pine and other species which demand much light. Whether natural regeneration is attempted by the selection system—that is, by taking out marketable trees here and there—or by the group system, or by successive cuttings spread over considerable areas, compartments or sub-compartments, success is easy in the case of shade-bearing trees, because a slight cutting is sufficient to induce seedlings to come up; and, secondly, because the young growth will continue to live under a certain amount of shade, until subsequent cuttings give more light. Again, the foliage of shade-bearing trees is dense, improving the soil by an abundant leaf-fall. Forests consisting of these species always maintain a dense canopy of leaves.

On the other hand, trees which demand much light, such as the Oak and Scotch Pine, spring up and thrive without much shelter; they will not come up where the shelter is too heavy, their foliage is light, and pure woods of these species get thin with age, because the weaker trees do not get light enough, and perish. In such woods the soil gets exposed to sun and wind, and deteriorates. Hence the finest Oaks are found where they have grown up in company with the Beech, or with the Silver Fir, as is the case in some instructive and valuable woods on the borders of the Black Forest, near Rastatt, Baden-Baden and Stanfen. Hence the Beech has justly been called the nurse of the Oak, and the same may be said of the Silver Fir. In this respect the Scotch Pine behaves like the Oak. It nowhere attains such perfection as when it grows up in company with the Beech, as we find it in the Steiger Wald, of Bavaria, or when it is mixed with the Spruce and Silver Fir, as we find it in the Black Forest.

In India the Teak is a tree which demands much light. This tree also thrives best, forming straight, clean, tall stems, when associated with shady kinds, such as the Bamboo. And when the forests of North America come to be studied, from a forester's point of view, or rather when they come to be managed in a regular and permanently profitable manner, the treatment of the different species will have to be guided by analogous considerations.

In endeavoring to set before American readers the management of the mixed Oak and Beech forests of the Spessart, we must be prepared for the objection, that these matters may be interesting from a scientific point of view, but that they cannot possibly be of any practical utility in managing North American forests. The trees are different, the climate is different. The American forester is skillful; he is full of resource, bold and energetic. He cannot possibly be expected to have the patience to find out whether the trees of his forest are light-demanding or shade-bearing. This would take much too long, and would interfere with business. However, it may not be out of place to state here that when the writer of these lines, in 1850, discovered that Teak was a light-demanding tree, he laid the foundation for the systematic management of the Teak forests in Burma, which has proved successful on a large scale, and will be lasting. There is no help for it; if forest proprietors in the United States wish to leave to their children forest estates, the value of which will grow steadily, or if foresters, with a still higher aim, desire to confer lasting benefits upon their country by inaugurating a good system of forest-management, they must follow the example of foresters of Germany and other countries of Europe, and study the requirements of American forest-trees in the matter of light and shade. This is at the root of good forest-management in all countries.

Bonn, Germany. *D. Brandis.*

Notes.

The Scotch Broom is a useful flowering shrub early in June. When planted on high well-drained land it is perfectly hardy near Philadelphia, although further north it suffers unless carefully protected in winter.

At the meeting of the Dutch Horticultural and Botanical Society of May 12th the Floral Committee awarded first-class certificates to Iris Ibparad, described as a hybrid between I. Iberica and I. paradoxa, and to I. Agatha, a hybrid between I. Iberica and I. Korolkowi venosa, exhibited by C. G. van Tubigen, of Haarlem, and to Mr. P. W. Voet, of Haarlem, for I. atrofusca of Baker.

Among hardy Catawbiense Rhododendrons which have been produced in England in recent years none is more beautiful than Lady Gray Egerton, distinguished by its large, dark, lustrous leaves, good habit and great trusses of light mauve-colored flowers, which are unsurpassed in delicacy. In a selection of six of the very best hardy Catawbiense Rhododendrons for American gardens this variety must be included with Everestianum, Lady Armstrong, Album grandiflorum, Caractacus and Charles Dickens.

Mr. N. O. Howard, of New York, a graduate of Cornell, has been appointed entomologist of the Department of Agriculture to fill the position made vacant by the retirement of Dr. C. V. Riley. Since 1886 Mr. Howard has been the first assistant to the entomologist of the Department, and is the author of numerous memoirs published by the Department, and a joint editor of *Insect Life*, the periodical issued by the Division of Entomology. The position of first assistant, created by Mr. Howard's promotion, has been filled by the appointment of Mr. C. L. Marlatt, of Kansas.

A great branch covered with flowers of the Japanese Viburnum tomentosum, which was figured on page 594 of vol. iv. of this journal, was exhibited last week before the Massachusetts Horticultural Society by Mr. George Chase, of Salem, and attracted much attention. This is certainly one of the most distinct and beautiful of hardy shrubs. Of free and graceful habit, it is, as an ornamental plant, superior to its sterile offspring, familiarly known in gardens as V. plicatum. Although not often seen in cultivation, V. tomentosum may be safely planted when a tall graceful shrub is desired.

In Germany, where the white grubs of the Dor or Maybug are as destructive as they are in this country, the local authorities, when the beetles abound, give notice, we read in the *Gardeners' Chronicle*, that on a certain day every person, without exception, who possesses a garden or farm must rise early and shake and rap their trees. The school children of all the folks' schools, with their teachers, are obliged to collect the beetles which have been shaken from the trees, gratuities being paid to each child who fills a leitre measure with them. The insects are killed by being put into tubs of boiling water, and are then used as manure.

Probably the prettiest floral display recently seen in New York filled the window of a florist on upper Broadway. The bottom of the window was covered with a mass of Lycopodium, in which were small sunken tanks filled with Water-lilies. Above these, at the back, leaned a fringe of Maiden-hair Fern, and back of this again were tall thick masses of Mountain Laurel in full bloom, while bunches of blue Iris occupied one corner of the window. The arrangement was charming in itself, and the rural ideas it suggested were in refreshing contrast to those inspired by the Orchids, huge Roses and other hot-house flowers usually seen in florists' windows.

South African fruit now finds a ready market in England, and there is every prospect that the cultivation of choice fruits and other garden produce at the Cape for the supply of European markets will soon become an important industry. Since the commencement of the fruit season, more than one hundred tons of fruit have been shipped to England; the condition of the fruit on its arrival has been very satisfactory to exporters, and the prices on the London market have been good. As things stand at present, it is cheaper and—always granting that the fruit arrives in marketable condition—pays better to ship to Covent Garden than to send to the Goldfields.

Spiræa media is a tall, erect-growing species, the first blossoms of which generally appear soon after those of S. Thunbergii, but hardly persist so long. The blossoms are produced in great abundance in large sessile umbels along the upper sides of the branches. The flowers, however, are of a greenish white rather than pure white color, and are, therefore, not generally considered so attractive as some others. This is also true of the Saint Peter's Wreath, S. hypericifolia, which blossoms at the same season. The flowers of this species are much smaller and less attractive than those of S. media, and the foliage is small and appears scattered, so that the straggling gray stems are prominent.

Mr. J. H. Hale writes to the *Farm Journal* that while every Strawberry that is grown has some particular point of merit either in plant or fruit, he believes that if the present list of two hundred or more varieties was cut down to less than twenty, every one would be better served, and if it were not that many of the best varieties were imperfect bloomers, and needed others to go with them to furnish pollen, the list might be made still shorter. Mr. Hale's list of six varieties for market, named in the order of their ripening, would be Leader, Bubach, Lovett, Windsor, Greenville and Swindle, while for family use, to cover the longest season, he would plant Dayton, Haverland, Princess, Sharpless, Greenville and Windsor.

Among Rhododendrons now offered for sale for the first time by Anthony Waterer are F. L. Ames, a variety with excellent foliage and well-shaped trusses of large flowers, the white corolla being marked on the border with a broad band of pale pink, and Mrs. C. S. Sargent, with the habit and broad, dark, rich green leaves of Everestianum and bright rose-colored flowers marked with a yellow blotch. This Mr. Waterer considers one of the best Rhododendrons which have been raised at Knap Hill, where nearly all the most desirable varieties common in our gardens have been produced. These two varieties have been thoroughly tested in the Arnold Arboretum for several years before being put in commerce, and there is no question of their hardiness in this climate.

A distinct and beautiful seedling Rhododendron, called Mrs. James Comley, was exhibited last week in Boston by its raiser, James Comley, of Lexington, who produced it several years ago by crossing our native Rhododendron maximum with some variety of the Catawbiense race. It produces pale flowers, shaded with pink, and is distinctly marked on the upper lobe of the corolla with a large, yellow blotch, showing in the leaves its relationship with Rhododendron maximum. These hybrid offspring of Rhododendron maximum and Catawbiense varieties, of which the best known here is Rhododendron delicatissimum, are well suited to our climate; and the English Rhododendron raisers, who are always anxious to secure good, hardy seedlings for the American market, can well devote their attention to producing new forms of this race in which varieties with red or dark-colored flowers are still unknown. These hybrids, in addition to their hardiness, have the merit of flowering after the Catawbiense varieties are out of bloom and before the flowering time of Rhododendron maximum, and are therefore useful for prolonging the Rhododendron season.

In the *Orchid Review* for April some interesting particulars are given in relation to the length of the period during which one who hybridizes Orchids must wait before he reaps the reward of his labors. The Disas seem to be the most energetic of the different genera, and one of them, D. Kewensis, flowered in eighteen months from the time the seed was sown. The Calanthes follow, with an average period of from three to four years between seed-sowing and flowering, although the first artificial hybrid, Calanthe Dominii, flowered when it was only two years old. Cypripediums, Selenipediums and Dendrobiums follow close after Calanthes, and then Masdevallias, Chysis and Phajus crossed with Calanthe will require on an average from four to five years. Zygopetalums and Lycastes require more time to reach the flowering stage, and Cattleyas and Lælias, with crosses between them, average from seven to ten years, with four years as the minimum period yet recorded and nineteen years as the maximum. Lælio-Cattleya caloglossa enjoys the distinction of bringing up the rear. The time required for maturing the capsule after the flower is fertilized also varies considerably. Calanthes take from three to four months; Masdevallias, four; Phalænopses, six; Lælia purpurata, nine; while Dendrobiums, Anguloas, Cypripediums and Cattleyas require a year to ripen seed. Seed is usually sown as soon as ripe, and a tiny leaf may push up within five or six weeks, or it may require as many months or still longer. And yet in some cases young plants have been pricked off within two months from the date of sowing the seed. It is pretty clear that the hybridizer must be content, as a rule, to wait some years after his experiments begin before he is rewarded by the sight of a flower, but meanwhile he has the pleasure of watching the development of the minute seed, which ought to be an ample reward to the true enthusiast.